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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,714	01/23/2004	Daniel Chien	60130-1495; 02MRA0344	7325
26096	7590	03/02/2006	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			KRAMER, DEVON C	
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**GROUP 3600**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/763,714

Filing Date: January 23, 2004

Appellant(s): CHIEN ET AL.

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John Siragusa  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 8/31/05 appealing from the Office action

mailed 12/30/04.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 4, 6, 13-14, 19-21 and 23-24 stand rejected under 35 U.S.C. 102(b) as being anticipated by Attinger (CH663387).

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Attinger (CH663387) in view of Anderson et al (4583609).

Claims 8, 15 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Attinger (CH663387) in view of Inoue et al (20020028721).

Claims 11-12, 18 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Attinger (CH663387) in view of Seki (20030136613).

#### **(10) Response to Argument**

IN reference to appellant's arguments with respect to claims 1, 4 and 6, Attinger provides an axle shaft (3, 7, 9) mounted for rotation within a housing (5) and a rotor (11) disposed outside the housing and attached to the axle shaft. Please note that portions of the axle shaft (7, 9) extend inside the housing (5). Please note there are two ways to read Attinger regarding claim 1. Scenario 1, is Attinger provides an axle assembly having an axle shaft (3, 7, 9), the axle shaft having a first end (element 2 in the figure) and a second end (near element 7), the axle mounted for rotation within a housing (5), the first end and the second end extending outside of the housing; a hub (2) fixed to the first end of the axle shaft; and a brake assembly including a rotor (11) disposed outside of the housing and attached to the axle shaft adjacent the second end, wherein the second end is spaced apart from the hub a first length greater than an axial length of the housing. Further in scenario 2, Attinger can be read as follows: Attinger provides an

axle assembly having an axle shaft (3, 7), the axle shaft having a first end (near hub portion on the left side of the figure) and a second end (near housing 5), the axle mounted for rotation within a housing (5), the first end and the second end extending outside of the housing; a hub (2) fixed to the first end of the axle shaft; and a brake assembly including a rotor (11) disposed outside of the housing and attached to the axle shaft adjacent the second end, wherein the second end is spaced apart from the hub a first length greater than an axial length of the housing. Please note the difference between the two readings is that in one the axle shaft is considered the portion of the axle to left of the housing (5) and in the other reading the axle shaft is considered the entire axle. Appellant argues that it is clear what is meant by "the second end". Please note that the first end can be the right portion of the axle and the second end can be the second end of the axle in the first scenario and, in the second scenario, the first end can be the portion attaching the left wheel in the figure and the second end can be the portion near the housing. Please note that both of these reading meet the claim limitations.

In reference to appellants arguments with respect to claims 13-14, 19-21, 23 and 24, appellant bring forth the same arguments as in claim 1. Please refer to the above rebuttal.

In response to appellant's argument with respect to claim 7, that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge

which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Please note that both pneumatically operated and hydraulically operated brakes are well known throughout the art. Equipping a vehicle with either pneumatic or hydraulic brakes is a design choice.

In re claims 8, 15 and 17, appellant argues that there is no suggestion to combine the references. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it is well known in the art that shafts are supported by bearings.

In re appellant's arguments with respect to claims 11-12, 18 and 22 are for the most part moot because claim 1, 13 and 19 remain rejected. Further appellant argues that that there is no suggestion to combine the references. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed.

Cir. 1992). It is well known in the brake art to mount the brake to a portion of a suspension because the suspension is disposed near the wheels and axles and are rigid sturdy members.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Devon Kramer

*Devon Kramer 2/22/06*

Conferees:

JM *[Signature]*  
RS *[Signature]*

Translated from the German

**SWISS CONFEDERATION  
Federal Office for Intellectual Property**

Patent of Invention for Switzerland and Liechtenstein  
Swiss-Liechtenstein Patent Protection Treaty, December 22, 1978

**PATENT SPECIFICATION A5**

**CH 663 387 A5**

**IPC: B60 B 37/02**

**B 61 H 5/00**

Name of grantee: Schweizerische Aluminum AG, Chippis, Neuhausen am Rheinfall, CH

Date of application: March 28, 1984

Date the patent was granted: December 15, 1987

Date of making available to the public by printing or similar process of the patent specification, on which grant has taken place on or before the said date: December 15, 1987

Inventor: Urs Attinger [residing in Riedt/Neerach, CH]

[Title in German of the object of the invention:]

**Radsatz für Schienenfahrzeuge.**

**WHEEL SET FOR RAILWAY VEHICLES**

**PATENT CLAIMS**

1. Wheel set for railway vehicles, having transmission arranged on a wheel-set shaft, accommodated in a transmission casing [gear box], which transmission drives the wheel-set shaft by means of hollow shafts and shaft couplings, and which wheel set is having at least a disk brake, to which there is assigned a break device, characterized in that the disk break (11) is fixed on a hollow shaft (7).

2. Wheel set as claimed in claim 1, characterized in that the brake disk (11) is engaged by disk brakes (12) of a disk brake caliper (14), which moves a brake cylinder (16).
3. Wheel set as claimed in claim 2, characterized in that the disk brake caliper (14) is attached on the transmission casing by means of a carrier cantilever (15).
4. Wheel set as claimed in claim 3, characterized in that the brake cylinder is also fixed on the carrier cantilever (15).

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The invention pertains to a wheel set for rail vehicles, having a transmission, arranged on a wheel-set shaft, which transmission drives the wheel-set shaft by means of hollows shafts and shaft couplings, and having at least a disk brake, to which there is assigned braking device.

Customarily, rail vehicles are provided with brake devices, which consist of disk brakes, directly installed on the wheel-set shafts. As a general rule, disk brake calipers are provided for the brake device, which disk brake calipers are attached on the supporting frame for the wheel-set shaft, i.e. - as a general rule - on the bogie frame. However, between wheel-set shaft and supporting frame there are preferably arranged spring suspensions so that relative motion originates between these two parts when the rail vehicle is operated.

Again, as a consequence of this, the disk brake and the brake device are not always fixed in a specified arrangement with respect to one another. This can lead to unequal compressing relationships of the brake shoes upon the disk brake. As a result of this, an elevated wear and tear (abrasive wear) takes place apart from the deterioration of the disk brake. In addition to this, the arrangement of the disk brake on the wheel-set shaft increases the unsprung mass.

More recently, a drive for a wheel-set shaft of rail vehicles was developed, which drive does not directly transmit the driving motion upon the wheel-set shaft but provides - in addition to this - for an arrangement of hollow shafts, having shaft couplings. In doing so, the transmission, respectively the transmission housing, encloses the wheel-set shaft, and drives a first hollow shaft. This hollow shaft - by way of a shaft coupling - is connected to a second hollow shaft of smaller diameter or conical shell blank, which hollow shaft now transmits the driving motion - by way of a second shaft coupling- upon the wheel-set shaft. The hollow shafts themselves are not fixed with respect to one another, but allow to a limited extent a relative motion of the wheel set shaft.

The inventor has as one=s aim to develop for a transmission arrangement of this kind a brake arrangement, which is not influenced by the motion of the wheel-set shaft, and whose brake effect is improved.

The fact that the disk brake is fixed on a hollow shaft leads to the achievement of this set objective

To this end, the first hollow shaft, protruding out of the transmission housing, offers its services because the said first hollows shaft - on the one hand - is not subjected to any relative motion, and - on the other hand - the transmission housing itself provides an opportunity for the fixing or locking of other brake devices.

Preferably, the disk brake should be engaged by brake shoes of a disk brake caliper. In doing so, at least a caliper element is connected to a brake cylinder Both caliper members are in such a way connected by means of hinged joints that brake-shoe forces of equal magnitude originate.

Preferably, the disk brake caliper should be fixed by means of a carrier cantilever on the transmission housing. An opportunity also presents itself to also fix the brake cylinder on the carrier cantilever so that the brake suspension system collectively consists of a single structural component. Therewith, it is guaranteed that a relative motion of any kind does not originate between disk brake and brake shoe. Therefore, larger brake shoes can be integrated than the brake shoes usually used until recently, which again results in a reduced specific brake-shoe pressing. Because the disk-brake mass should be counted out as virtual component to the spring-mounted supporting frame, respectively bogie frame, this has a favorable effect from a vibration-engineering standpoint.

Additional advantages, features and particularities of the invention ensue from the description of an exemplified embodiment, which follows, as well as from the drawing. The latter shows in a single figure a partial section of a top view of a wheel set for railroad vehicles.

Two wheels 2, which belong to a wheel set 1, for a rail vehicle, which is not diagrammatically represented in greater detail, are connected to one another by means of a wheel-set shaft 3, which is pivoted in wheel bearings 4.

The propulsion motion for the wheel-set shaft 3 is transmitted by a motor - which is not shown - upon a transmission, arranged in the transmission housing 5. This gearbox or transmission surrounds the wheel-set shaft 3, whereby the driving or propulsion motion is transmitted upon a hollow shaft 7, also surrounding the wheel-set shaft 3. By means of a shaft coupling 8, yet another hollow shaft 9 - penetrating the hollow shaft 7 and the transmission housing - is then set in motion, which hollow shaft 9 is again directly coupled by means of a shaft coupling 10 to the wheel-set shaft 3.

On the hollow shaft 7, there is also arranged a disk brake 11, which is acted upon by brake shoes 12 of a disk-brake caliper 14. The disk-brake caliper 14 is rigidly connected by way of a carrier cantilever 15 to the transmission housing 5, on which disk brake caliper there is also fixed a brake cylinder 16 for the activation of the disk brake caliper 14. The brake cylinder 16 drives a piston rod 17, which is pivoted to a member of the disk brake caliper. Both members of the disk brake caliper 14 are in such a way connected to one another by means of hinged joints that the brake shoes 12 are moved oppositely to one another when the piston rod 17 pulls on one of the members of the disk brake caliper 14.

An arrangement, which is thus described can also be provided on both sides of the transmission casing whereby on the other hand another disk brake is fixed on an elongation of the hollow shaft 7.

Translated by John M Koytcheff, M.Sc. (Engrg.); WHO Postgraduate Fellow (Env. Engrg); USNWC Graduate

The USPTO Translator from GERMAN & Germanic languages  
USPTO /STIC  
February 23, 2006

